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CLAIMS

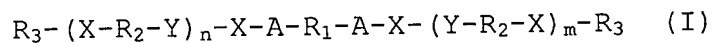
1. A precursor article of a composite material comprising a polymeric matrix and at least one reinforcing yarn and/or fibers, said article comprising at least one reinforcing yarn and/or fibers and at least one polymeric-matrix yarn and/or fibers, characterized in that:

- said reinforcing yarn and/or fibers are made of reinforcing material and optionally include a part made of a thermoplastic polymer;

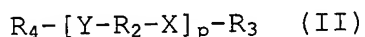
- said polymeric-matrix yarn and/or fibers are made of a thermoplastic polymer, and in that:

- said thermoplastic polymer of said reinforcing yarn and/or fibers and/or of said polymeric-matrix yarn and/or fibers comprises at least one polycondensate consisting of:

• 30 to 100 mol% (limits inclusive) of macromolecular chains satisfying the following formula (I):



• 0 to 70 mol% (limits inclusive) of macromolecular chains satisfying the following formula (II):



in which chains:

• -X-, -Y- is a radical obtained from the condensation of two reactive functional groups F_1 and F_2 such that:

- F_1 is the precursor of the -X- radical and F_2 is the precursor of the -Y- radical, or vice versa,

- the functional groups F_1 cannot react together by condensation and

- the functional groups F_2 cannot react together by condensation;

- A is a covalent bond or an aliphatic hydrocarbon radical that may comprise heteroatoms and contains 1 to 20 carbon atoms;

- R₂ is a branched or unbranched, aliphatic or aromatic hydrocarbon radical containing 2 to 20 carbon atoms;

- R₃, R₄ represents hydrogen, a hydroxyl radical or a hydrocarbon radical;

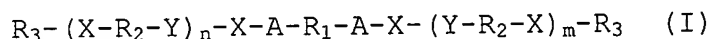
- R₁ is a linear or cyclic, aromatic or aliphatic, hydrocarbon radical containing at least 2 carbon atoms and possibly including heteroatoms; and

- n, m and p each represent a number between 30 and 200.

2. The article as claimed in claim 1, characterized in that the thermoplastic polymer comprises at least one polyamide A1 consisting of:

- 30 to 100 mol% (limits inclusive) of macromolecular chains satisfying the following formula

(I):



- 0 to 70 mol% (limits inclusive) of macromolecular chains satisfying the following formula (II):



in which:

- Y is the $\begin{array}{c} \text{---N---} \\ | \\ R_5 \end{array}$ radical when X represents the $\begin{array}{c} \text{---C---} \\ || \\ O \end{array}$ radical;

- Y is the $\begin{array}{c} \text{---C---} \\ || \\ O \end{array}$ radical when X represents the $\begin{array}{c} \text{---N---} \\ | \\ R_5 \end{array}$ radical;

- A is a covalent bond or an aliphatic hydrocarbon radical possibly including heteroatoms and containing 1 to 20 carbon atoms;

- R₂ is a branched or unbranched, aliphatic or aromatic, hydrocarbon radical containing 2 to 20 carbon atoms;

- R₃, R₄ represents hydrogen, a hydroxyl radical or a hydrocarbon radical comprising a $\begin{array}{c} -\text{C}- \\ || \\ \text{O} \end{array}$ or $\begin{array}{c} -\text{N}- \\ | \\ \text{R}_5 \end{array}$ group;

- R₅ represents hydrogen or a hydrocarbon radical containing 1 to 6 carbon atoms;

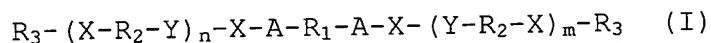
5 - R₁ is a linear or cyclic, aromatic or aliphatic, hydrocarbon radical containing at least 2 carbon atoms and possibly including heteroatoms; and

- n, m and p each represent a number between 30 and 200.

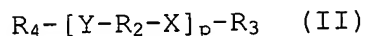
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3. The article as claimed in claim 1, characterized in that the thermoplastic polymer comprises at least one polyester A2 consisting of:

• 30 to 100 mol% (limits inclusive) of
15 macromolecular chains satisfying the following formula (I):



• 0 to 70 mol% (limits inclusive) of
macromolecular chains satisfying the following formula
20 (II):



in which chains:

- Y is the -O- radical when X represents the $\begin{array}{c} -\text{C}- \\ || \\ \text{O} \end{array}$ radical;

25 - Y is the $\begin{array}{c} -\text{C}- \\ || \\ \text{O} \end{array}$ radical when X represents the -O- radical;

- A is a covalent bond or an aliphatic hydrocarbon radical possibly including heteroatoms and containing 1 to 20 carbon atoms;

30 - R₂ is a branched or unbranched, aliphatic or aromatic, hydrocarbon radical containing 2 to 20 carbon atoms;

- R₃, R₄ represents hydrogen, a hydroxyl radical or a hydrocarbon radical comprising a $\begin{array}{c} -\text{C}- \\ || \\ \text{O} \end{array}$ or -O- group;

- R_1 is a linear or cyclic, aromatic or aliphatic, hydrocarbon radical containing at least 2 carbon atoms and possibly including heteroatoms; and

- n , m and p each represent a number between 30
5 and 200.

4. The article as claimed in one of the preceding claims, characterized in that n , m and p are between 30 and 150.

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5. The article as claimed in one of claims 2 to 4, characterized in that the polyamide A1 or the polyester A2 comprises at least 45 mol%, preferably at least 60 mol%, of macromolecular chains satisfying formula
15 (I).

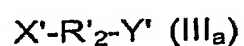
6. The article as claimed in one of the preceding claims, characterized in that R_2 is a pentamethylene radical.

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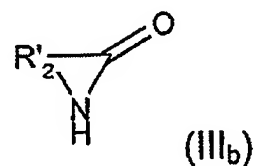
7. The article as claimed in one of claims 2 to 6, characterized in that the polyamide A1 or the polyester A2 is obtained by copolymerization from a monomer mixture comprising:

25 a) a difunctional compound, the reactive functional groups of which are chosen from amines, carboxylic acids, alcohols and derivatives thereof, the reactive functional groups being identical;

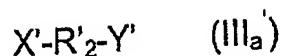
b) monomers of the following general formulae
30 (III_a) and (III_b) in the case of the polyamide A1:



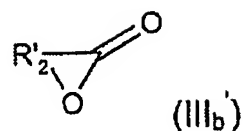
or



b') monomers of the following general formulae (III_a') and (III_b') in the case of the polyester A2:



or



in which formulae:

• R'_2 represents a substituted or unsubstituted, aliphatic, cycloaliphatic or aromatic hydrocarbon radical containing 2 to 20 carbon atoms and possibly including heteroatoms;

• Y' is an amine radical when X' represents a carboxylic radical, or Y' is a carboxylic radical when X' represents an amine radical, in the case of the polyamide A1; and

• Y' is a hydroxyl radical when X' represents a carboxylic radical, or Y' is a carboxylic radical when X' represents a hydroxyl radical, in the case of the polyester A2.

8. The article as claimed in claim 7, characterized in that compound a) represents between 0.1 and 2 mol% relative to the number of moles of monomers of type b) or b').

9. The article as claimed in one of claims 2 to 6, characterized in that the polyamide A1 or the polyester A2 is obtained by melt blending a polyamide of the type of those obtained by polymerization of lactams and/or amino acids or a polyester of the type of those obtained by polymerization of lactones and/or hydroxyacids with a difunctional compound, the reactive functional groups of which are chosen from amines, alcohols, carboxylic acids and derivatives thereof, the reactive functional groups being identical.

10. The article as claimed in claim 9, characterized in that the difunctional compound represents between 0.05 and 2% by weight relative to the weight of polyamide or polyester.

11. The article as claimed in one of claims 7 to 10, characterized in that the difunctional compound is represented by formula (IV):



in which X'' represents an amine radical, a hydroxyl radical, a carboxylic group or derivatives thereof.

12. The article as claimed in one of claims 7 to 11,
10 characterized in that the difunctional compound is chosen from adipic acid, decanoic or sebacic acid, dodecanoic acid, terephthalic acid, isophthalic acid, hexamethylenediamine, methylpentamethylenediamine, 4,4'-diaminodicyclohexylmethane, butanediamine,
15 metaxylylenediamine, 1,3-propanediol, 1,2-ethanediol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol and polytetrahydrofuran.

13. The article as claimed in one of claims 2 to 6,
20 characterized in that the polyamide A1 or the polyester A2 is obtained by melt blending a polyamide of the type of those obtained by polymerization of lactams and/or amino acids or a polyester of the type of those obtained by polymerization of lactones and/or
25 hydroxyacids, with a compound of formula (V):



in which:

- R is a substituted or unsubstituted, linear or cyclic, aromatic or aliphatic hydrocarbon radical
30 possibly including heteroatoms; and
- G is a functional group or a radical that may react selectively either with the amine reactive functional groups, or with the alcohol reactive functional groups, or with the carboxylic acid reactive
35 functional groups of the polyamide or of the polyester, in order to form covalent bonds.

14. The article as claimed in claim 13, characterized in that the compound of formula (V) represents between

0.05 and 2% by weight relative to the weight of polyamide or polyester.

15. The article as claimed in one of the preceding
5 claims, characterized in that it also includes at least one matrix yarn and/or fibers made of a linear thermoplastic polymer.

16. The article as claimed in claim 15, characterized
10 in that the linear polymer is an aliphatic and/or semicrystalline polyamide or copolyamide chosen from the groups comprising nylon-4,6, nylon-6, nylon-6,6, nylon-6,9, nylon-6,10, nylon-6,12, nylon-6,36, nylon-11, nylon-12 or a semicrystalline semiaromatic
15 polyamide or copolyamide chosen from the group comprising polyphthalamides, and blends of these polymers and of their copolymers.

17. The article as claimed in one of the preceding
20 claims, characterized in that the matrix yarns and/or fibers also include additives, such as flame retardants, plasticizers, heat and light stabilizers, waxes, pigments, nucleating agents, antioxidants, impact strength modifiers or the like.

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18. The article as claimed in one of the preceding claims, characterized in that the reinforcing yarns and/or fibers are chosen from carbon, glass, aramid and polyimide yarns and/or fibers.

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19. The article as claimed in one of the preceding claims, characterized in that the reinforcing yarns and/or fibers are natural yarns and/or fibers chosen from sisal, hemp and flax yarns and/or fibers.

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20. The article as claimed in one of the preceding claims, characterized in that it also includes a matrix precursor powder material.

21. The article as claimed in the preceding claims, characterized in that said matrix precursor powder material is a polyamide.

5 22. The article as claimed in one of the preceding claims, characterized in that it is formed from continuous or chopped yarns, tapes, mats, braids, wovens, knits, webs, multiaxial fabrics, nonwovens and/or complex forms comprising several of the
10 aforementioned forms.

23. A composite, characterized in that it is obtained from an article as claimed in one of the preceding claims by at least partial melting of the matrix yarns
15 and/or fibers.

24. The composite as claimed in the preceding claim, characterized in that it has a reinforcement content of between 25 and 80% by weight.

20 25. A semifinished product, characterized in that it is obtained by a process of thermoforming or calendering the article as claimed in one of claims 1 to 22, during which the matrix yarns and/or fibers are
25 at least partially melted so as to impregnate the reinforcing yarns and/or fibers.

26. The semifinished product as claimed in claim 25, characterized in that it is in sheet or tape form.

30 27. A finished product, characterized in that it is obtained by a process of thermoforming the article as claimed in one of claims 1 to 22 to the final shape, during which the matrix yarns and/or fibers are at
35 least partially melted so as to impregnate the reinforcing yarns and/or fibers.

28. A finished product, characterized in that it is obtained by a process of forming or compression molding

the semifinished product as claimed in either of claims 25 and 26 to the final shape.